

REMARKS/ARGUMENTS

According to the Office Action, claims 4-5, 20-21, and 29-30 are objected to for being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Examiner is sincerely thanked for finding that these claims present allowable subject matter.

In response, claims 4, 20, and 29 are rewritten in independent form. Claims 5, 21, and 30 depend respectively from now independent claims 4, 20, and 29. Accordingly, these claims should now be in condition for allowance.

According to the Office Action, claims 1-3, 6-19, 22-28, and 31-34 stand rejected under 35 U.S.C. 102(e) for allegedly being anticipated by U.S. Patent No. 6,591,091 (Vorkenkamp et al.). For the following reasons, this rejection is respectfully traversed.

With respect to claims 9-16, dependent claim 12 with a slight modification is rewritten in independent form as amended claim 9. Accordingly, claims 11-12 are cancelled. The element of "wherein converting said reference signal is performed by a first saturated amplification stage cascaded with a second saturated amplification stage" is neither described nor suggested in the Vorkenkamp Patent. In fact, the Vorkenkamp Patent teaches away from this element.

This element basically provides for including two saturated stages of amplification to generate the harmonic-rich signal. In the Vorkenkamp Patent, there is a linear stage 720 followed by a non-linear stage 1352 (See Fig. 13, col. 22, lines 46-56). Teaching away from using multiple cascaded non-linear stages, the Vorkenkamp Patent states:

In the prior art, signal transformation from a sinusoidal signal to a square wave output is typically implemented by using an inverter to square sinusoidal input signal. A digital inverter function might be characterized as a nonlinear amplifier of a transformed sinusoidal input signal to a square wave by providing extremely high gain, such that the input signal is driven to the rail during amplification (i.e. clipping). Thus, the output signal of a typical inverter might be characterized as a clipped sine wave. *This particular nonlinearity characteristic of the inverter further provides opportunities for phase noise to be added to the output signal.* (emphasis added) (col. 23, lines 1- 12)

* * *

Thus, in the present invention, phase noise is minimized in the nonlinear buffer amplifiers 1352, 1354, and 1556 by amplifying the differential signal provided by the crystal oscillator circuit through the linear amplifier 720 in order to increase the amplitude, and thus the slew rate, of the signal prior to its conversion a square wave. *Phase noise resulting from zero crossing of the nonlinear buffer amplifiers is thereby minimized.* (emphasis added) (col. 23, lines 15-22).

* * *

Additionally, *the use of linear buffer amplifiers followed by non-linear amplification* in a reference oscillator circuit is a unique improvement over the prior art in reducing phase noise. (emphasis added) (col. 26, lines 1-4).

With regard to claims 1-3, 6-8, 17-19, 22-28, and 31-34, independent claims 1, 17, and 26 recite a "sampling phase detector." (emphasis added). The Vorkenkamp Patent fails to mention that the phase detectors shown in Figures 17-18 are of the "sampling" type. Since this is a rejection under 35 U.S.C. 102, requiring an identical anticipating disclosure, the Vorkenkamp Patent fails to meet the requirements of this statute by not describing or suggesting that the phase detector is a sampling phase detector.

Furthermore, with regard to the rejections of dependent claims 3, 19, and 28 requiring two saturated amplification stage, for the same reasons argued above in furtherance of the allowance of claims 9-16, the rejection of these claims is respectfully traversed.

Conclusion

In view of the foregoing amendments and remarks, allowance of claim 1-10 and 13-34 is respectfully requested.

Respectfully submitted,

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